BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Foundation Diploma in Engineering Pearson BTEC International Level 3 Diploma in Engineering Pearson BTEC International Level 3 Diploma in Electrical and Electronic Engineering Pearson BTEC International Level 3 Diploma in Mechanical Engineering Pearson BTEC International Level 3 Diploma in Digital Engineering Pearson BTEC International Level 3 Diploma in Manufacturing Engineering Pearson BTEC International Level 3 Extended Diploma in Engineering Pearson BTEC International Level 3 Extended Diploma in Electrical and Electronic Engineering Pearson BTEC International Level 3 Extended Diploma in Mechanical Engineering Pearson BTEC International Level 3 Extended Diploma in Digital Engineering Pearson BTEC International Level 3 Extended Diploma in Manufacturing Engineering
Unit number and title	**Unit 24: Maintenance of mechanical Systems**
Learning aim(s)	**B:** Investigate the characteristics and applications of common consumable components used in mechanical systems **C:** Investigate the operation and application of power transmission components used in mechanical systems
Assignment title	Characteristics and Application of Components in Mechanical Systems
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You are a first year maintenance apprentice in a large manufacturing company. When you are in a workshop environment you will be supervised by a final year apprentice. When in a workshop environment you must observe all of the necessary H&S procedures that are appropriate. Your supervisor has asked to start to document a record of the components and consumables that are sometimes required to be replaced by the Maintenance Department and for which replacements are required to be kept for in some cases and then fitted when required by the Maintenance Department. The document will require information concerning the parts in question which you will need to research. The document will be used by the department to consider their replacement part strategy for the company.

Task 1	Common **component and consumables** You are required to produce a document that will be used by the Maintenance Department to consider alternatives in respect of their replacement part strategy for the company, and to provide detail related to the components examined. 1. Your supervisor has asked you to consider looking at the transmission related components of two mechanical systems: one containing vee belts used on the pulley system of a horizontal milling machine, one containing gears in the transmission system of a small petrol engine; and the following consumable components: the seal on the pump for a coolant system, the bearing used on the pulley system, and the fastenings securing the small petrol engine onto a frame. 2. For each of the components that you have been asked to look at and describe in your document: evaluate the characteristics of each component, its application (why and how it is used), how it contributes to the overall operation of the system, and how it is to be maintained and ultimately replaced. You also need to suggest and justify two alternatives for each component.
Checklist of evidence required	You will need to produce a document that is capable of expanding to consider other components. Your document will have the following evaluative sections: 1. A suitable title page, 2. A contents page, 3. An introduction indicating the purpose of the document, 4. A section for each of the components that have been examined. Each of the sections for the components will cover the characteristics of the components that have been examined, their application (why and how they are used), how they contribute to the overall operation of the system, particularly in respect of the loadings and speed range, and how they are to be maintained and ultimately replaced, indicating your suggested replacement and justification for each.

Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria you must show that you are able to:
24/BC.D2	Evaluate the characteristics and applications of at least three types of consumable and the operation of at least three types of power transmission components in two mechanical systems, including how they each contribute to the system and their maintenance considerations.
24/B.M2	Justify the characteristics, applications and maintenance considerations of at least three types of consumable components used in two mechanical systems.
24/C.M3	Analyse the operation of and maintenance considerations for power transmission gears and two other power transmission components in two mechanical systems.
24/B.P2	Explain the characteristics, applications and maintenance considerations of at least three types of consumable components used in two mechanical systems.
24/C.P3	Explain the operation of and maintenance considerations for power transmission gears in two mechanical systems.
24/C.P4	Explain the operation of and maintenance considerations for two other power transmission components in two mechanical systems.

Sources of information to support you with this Assignment	**Textbooks** Kibble, R, T., Mechanical Systems for Industrial Maintenance, Prentice Hall, ISBM 978-0130164902, 2001. Jeffrey, D., Principles of Machine Operation and Maintenance, Routledge, ISBN 978-0-7506-0293-8, 2011 Mobley, K., Maintenance Fundamentals, Elsevier Butterworth-Heinemann, ISBN 0-7506-7798-8, 2004. Mobley, K. (ed), Maintenance Engineering Handbook, McGraw-Hill, ISBN 978-0-07-182664-8, 2014 **Websites** Theengineeringtoolbox.com This is a general web site for engineering and is very useful. The site is American so the spelling of words will not be “English” in some cases. The site can be searched and it contains material on the majority of topics at all levels. The internet will be a good resource generally for this subject ranging from data available from suppliers to specific information available from educational organisations. Care must be exercised in respect of the suitability. **Above are some examples of websites. Further useful resources may be found at** qualifications.pearson.com/en/support/published-resources.html#step1